

■ EKSMA社製非線形光学結晶 BBO結晶

PHYSICAL AND OPTICAL PROPERTIES		
Chemical formula	BaB ₂ O ₄	
Crystal structure	trigonal, 3m	
Optical symmetry	Negative Uniaxial (n _o >n _e)	
Space group	R3c	
Density	3.85 g/cm ³	
Mohs hardness	5	
Optical homogeneity	$\partial n = 10^{-6} \text{ cm}^{-1}$	
Transparency region at “0” transmittance level	189 – 3500 nm	
Linear absorption coefficient at 1064 nm	< 0.1% cm ⁻¹	
Refractive indices	no	ne
at 1064 nm	1.6551	1.5426
at 532 nm	1.6750	1.5555
at 355 nm	1.7055	1.5775
at 266 nm	1.7571	1.6139
at 213 nm	1.8465	1.6742
Sellmeier equations (λ, μm)	$n_o^2 = 2.7366122 + 0.0185720 / (\lambda^2 - 0.0178746) - 0.0143756 \lambda^2$ $n_e^2 = 2.3698703 + 0.0128445 / (\lambda^2 - 0.0153064) - 0.0029129 \lambda^2$	
Phase matching range Type 1 SHG	410 – 3300 nm	
Phase matching range Type 2 SHG	530 – 3300 nm	
Walk-off angle	55.9 mrad (Type 1 SHG 1064 nm)	
Angular acceptance	1.2 mrad × cm (Type 1 SHG 1064 nm)	
Thermal acceptance	70 K × cm (Type 1 SHG 1064 nm)	
Nonlinearity coefficients	$d_{22} = \pm 2.2 \text{ pm/V}$ $d_{15} = d_{31} = \pm 0.08 \text{ pm/V}$	
Effective nonlinearity expressions	$d_{\text{ooe}} = d_{31} \sin\theta - d_{22} \cos\theta \sin 3\phi$ $d_{\text{eoe}} = d_{\text{oeo}} = d_{22} \cos 2\theta \cos 3\phi$	
Thermal expansion coefficient	$\alpha_{11} = 4 \times 10^{-6} \text{ K}^{-1}$ $\alpha_{33} = 36 \times 10^{-6} \text{ K}^{-1}$	
Damage threshold for TEM ₀₀ 1064 nm	> 0.5 GW/cm ² at 10 ns ~ 50 GW/cm ² at 1 ps	